

Environmental Education: Drinking Water and Being Water Wise

Become a Leak Detective!

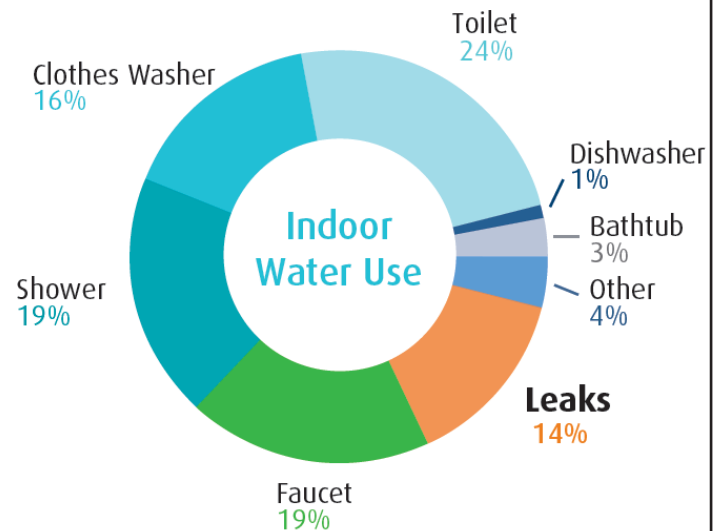
Background Information

Drinking water for the Greater Victoria Water System is currently provided from the Sooke and Goldstream watersheds. Together these watersheds comprise 10,927 hectares and include five surface reservoirs or lakes. These reservoirs collect and store runoff from precipitation, mostly in the form of rain. Collected water is treated before being distributed to our homes as clean tap water.

In the capital region, we use an average of **232** litres of water per person, per day. Most of our water use (**72%**) occurs indoors.

Of all indoor water use, approximately **14%** is lost to leaks. With simple and regular checks we can reduce the amount of water lost to leaks. One of the biggest culprits for leaks is our toilets. They are hard to detect and could be wasting 20-40 litres of water per hour. It is important to be aware of where and how we use water. Awareness allows us to better protect and conserve our drinking water.

Complete the leak detective activity to review where common household leaks occur and simple ways to stop those leaks.



Did you know... 232 litres is the same as 58 milk jugs filled with water? That's a lot of water!



Approximately **23 litres** of drinking water is lost to leaks every day.

Warm-Up

Brainstorm all the things in your house that use water and could therefore potentially have a leak. Write ideas down on a piece of paper or discuss verbally.

Activity Instructions

Search your house for leaks!

Locating and fixing leaks helps conserve drinking water and save money. The most likely culprits for leaks are toilets, faucets, showerheads, service lines and sprinkler systems. This activity takes you through a few different methods for checking your house for leaks. Separate outlines describing how to check your water meter, toilets, showerheads and faucets are included. Complete all, or pick and choose which fixtures you would like to check.

Please check with an adult at home before doing these activities and ask for help if you need assistance.

Mission 1 — Monitor the Meter

Every day our water meters are measuring the drinking water we use inside and outside our homes. They will even track the water we may not know we are using — such as leaking taps or toilets. Before hunting down leaks, monitor your water meter to find out how much water is used by your house.

Estimate your household water use.

If the average person in our region uses 232 L of water per day, how much water would you expect your whole family or household to use per day?

$$\frac{232 \text{ L}}{\text{(water per person)}} \times \frac{\text{X}}{\text{(number of people)}} = \frac{\text{L}}{\text{(total water for household)}}$$

Locate your water meter.

Water meters can usually be found in a 10 x 15 inch box made of metal, concrete or plastic. The water meter box is usually located outside in the ground close to the curb but may also be inside your house.

* If you do not feel you can remove the water meter lid without causing damage or cannot locate your water meter, skip this section and move on to Mission 2.

Record your water meter readings.

Record the readings from your water meter first thing in the morning and in the evening in the chart provided.

Calculate daily home water use.

Subtract the morning reading from the evening reading to get the amount of water used by your house that day. Complete this on a few different days to get an average.

Day	Morning Meter Reading	Evening Meter Reading	Water Used Evening reading — Morning reading = Water used (m ³)	Water Used (in litres)
Tuesday	2243 (or 22.43 m ³)	2313 (or 23.13 m ³)	23.13 - 22.43 = 0.7 m ³	0.7 m ³ x 1000 = 700 L

(1 cubic metre or m³ = 1,000 litres = 220 gallons)

If you are using more water than expected, you may have a leak. Be a leak detective and search your house for clues of leak.

Discussion

Does the water meter reading match your estimated household water use? Was the estimate higher or lower? What factors that impact household water use and may account for a difference between the reading and estimate? What are some other ways (in addition to fixing leaks) that you could reduce home water use?

Resources

For more information, including photos, on how to read water meters visit the links below.

CRD — [Reading Water Meters](#), [Checking for a Leak](#), [Be a Leak Detective](#)

Regional District of Nanaimo — [How to Check for a Leak](#)

Home Water Works — [Read Your Water Meter](#)

Mission 2 — Crush the Flush

Toilets use 24% of all indoor water. Depending on your toilet, 4.8 to 20 litres of drinking water is used every time you flush. Toilets that leak, or continue to run after flushing, can waste an extra 20 to 40 litres of water per hour. In one year, that's 175,000 to 350,000 litres (175 to 350 cubic metres) of water — enough to fill a swimming pool!

Determine how much water your toilet uses per flush.

Find the litres per flush (LPF) for your toilet(s). Look for a stamp near the hinges of the lid or inside the tank or lid of the tank. There is often a LPF value stamped somewhere on the toilet. If you cannot find a stamp, estimate your LPF or use these [instructions](#) from Marin Municipal Water District to manually check your toilet's LPF.

Older toilets have LPFs as high as 20 L. New toilets can use as little as 4.8 LPF. Current BC Building Code for newly installed toilets is 4.8 LPF or less.

Check your toilet for leaks.

Carefully remove the toilet tank lid. Place a dye tablet or some food colouring in the tank. Wait 20 to 30 minutes, then check the water in the toilet bowl. If the water is coloured, you've got a leak.

A common culprit for a leaky toilet is the toilet flapper, the rubber seal that closes off the flush valve in the water tank. Sometimes the flapper just needs to be tightened or adjusted. If it is warped and needs to be replaced, flappers are relatively inexpensive and simple to replace yourself.

Don't have food colouring? Contact waterwise@crd.bc.ca to request free dye tablets.

Toilet	Litres per Flush (LPF)	Time Dye Added	Leak Detected?
#1 — Downstairs	12 LPF	9:45 am	No

Discussion

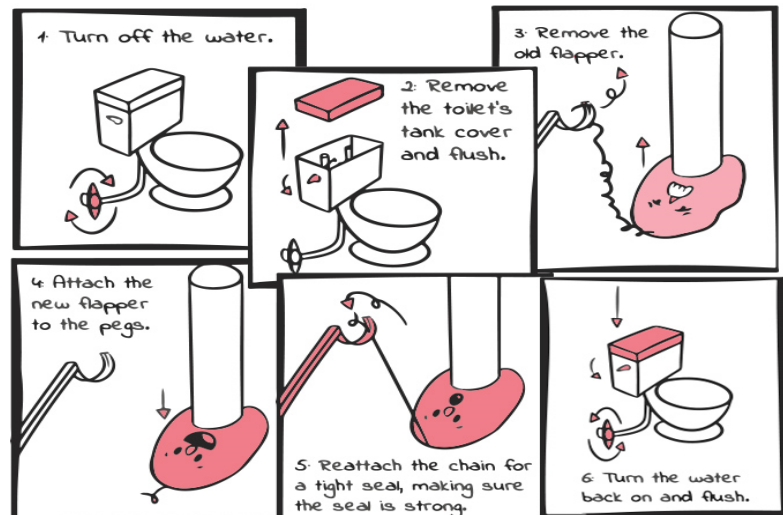
Did your toilets have any leaks? Were you able to fix them?

What are some ways you could limit the amount of drinking water used by toilets?

Resources

CRD [Be a Leak Detective](#) and [High-Efficiency Toilets](#)

U.S Environmental Protection Agency video — [How to Replace Your Leaky Toilet Flapper](#)



Mission 3 — Cap the Tap

Taps and showerheads with just a slight intermittent drip can waste more than 35,000 L or 35 m³ of water a year. That's enough to fill a bathtub 184 times!

Check your taps for leaks.

Go around your house and check every faucet, tap and showerhead to see if they are dripping.

Record your findings below.

Taps and Showerheads (by room)	Is it dripping?	Is it fixed?
Kitchen faucet	Yes	Yes - tightened knob

Discussion

What are some ways (other than leaks) water might be wasted when using taps and showers?

What can you do to reduce the amount of water you use when showering or using taps?

Resources

CRD [High-Efficiency Showerheads](#), [Water Conservation at Home](#), [Water Saving Tips](#)

U.S Environmental Protection Agency's [Fix a Leak Week](#) — tips on how to fix leaks around the house.

Extensions

Use an online [water use calculator](#) to estimate your total indoor water use.

Complete the CRD Weekly Water Use Chart to find out where you use the most water at home.

Watch the animated video [Down the Drain and Back Again](#) (16:06) to learn about where the capital region's drinking water comes from and tips on how to use our drinking water wisely.

Listen to a podcast and learn about smart toilets:

Wow in the World — "Hosts Mindy Thomas and Guy Raz guide curious kids and their grown-ups on a journey into the wonders of the world around them."

- **Are you smarter than a toilet?** (27:00) "Are you tired of the same old toilet? Mindy is! And thanks to a team of engineers at Stanford University, a newer, smarter, toilet is on the horizon! Join Mindy, Guy Raz, and Dennis at the Bathroom Showcase, as they learn the latest in new toilet technology! It's the Who, What, When, Where, Why, How, and Wow in the world of SMART TOILETS!"

[\[https://www.npr.org/2020/05/01/849274585/are-you-smarter-than-a-toilet\]](https://www.npr.org/2020/05/01/849274585/are-you-smarter-than-a-toilet)